

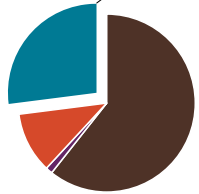
# The CO<sub>2</sub> standard required for trucks and buses for Europe to meet its climate targets

Eamonn Mulholland

14/Apr/2022

# A very brief overview of HDVs in Europe

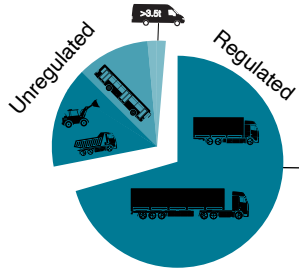
## Heavy-duty vehicles



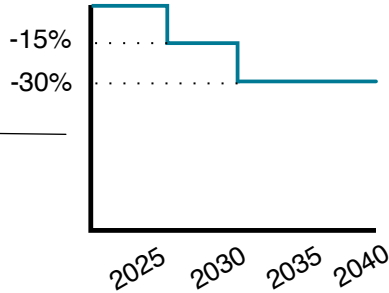
CO2 Emissions



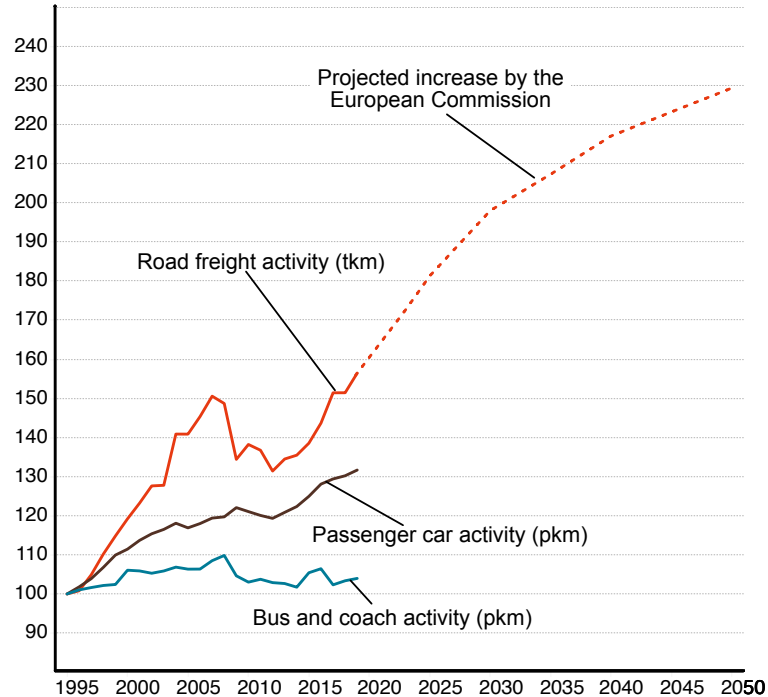
Vehicle Stock



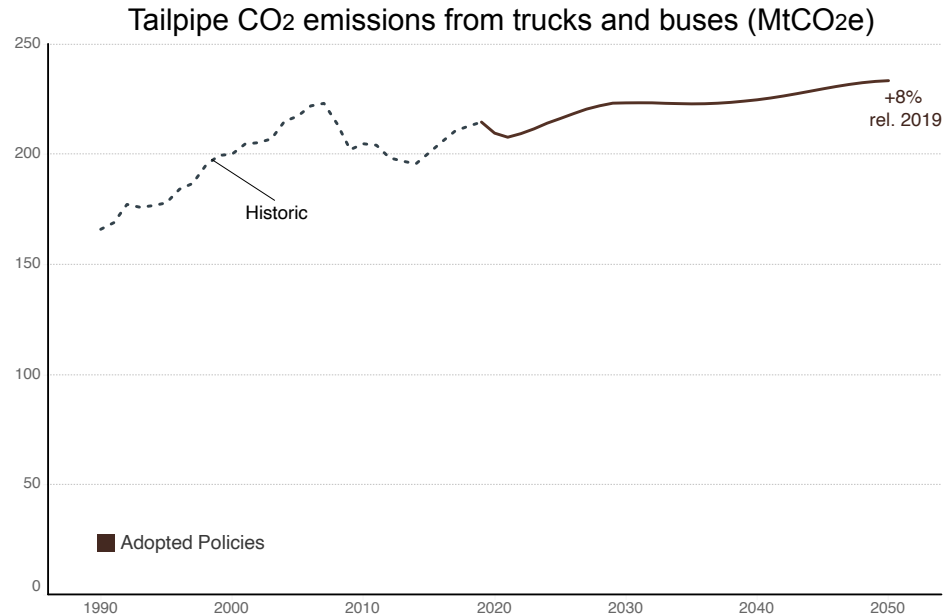
CO2 Standard



## Vehicle Activity (Index 1995=100)



# HDV emissions are on track to rise



# EU Transport emission reduction targets

## The European Green Deal COM(2019) 640 final:

*“To achieve climate neutrality, a 90% reduction in transport emissions is needed by 2050”*

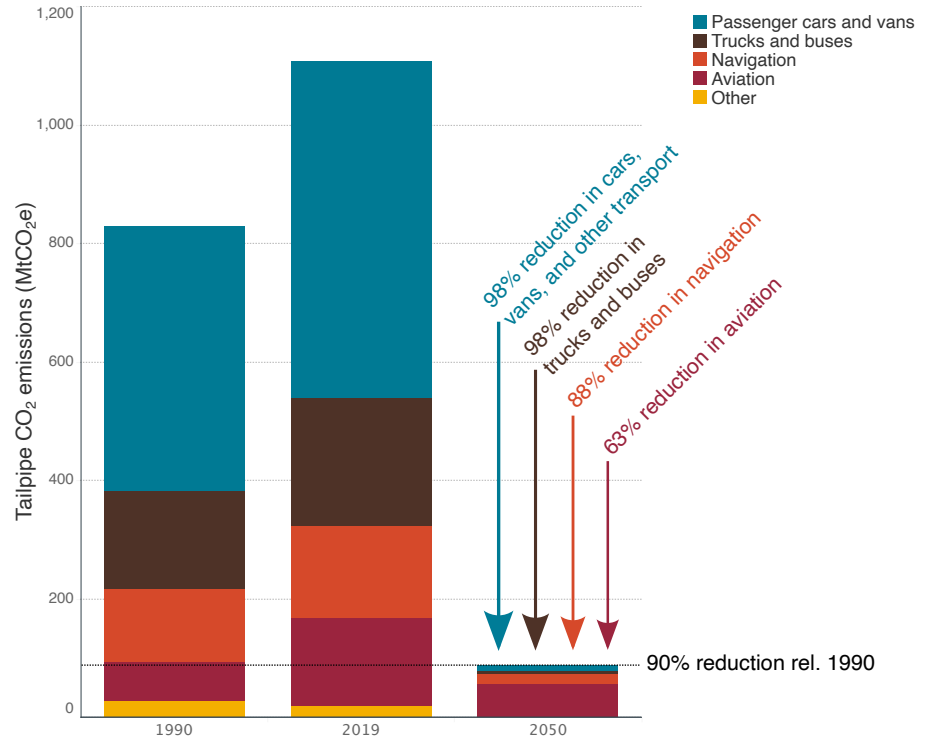
## Sustainable and Smart Mobility Strategy:

*“By 2050 nearly all cars, vans, (...) will be zero emission”* COM(2020) 789 final

## Fit for 55 Proposal:

*“(.) renewable and low carbon fuels should represent between 6% and 9% of the international maritime transport fuel mix in 2030 and between 86% and 88% by 2050”* COM(2021) 562 final

*“(.) sustainable aviation fuels should account for at least 5% of aviation fuels by 2030 and 63% by 2050”* COM(2021) 561 final



# Scenario analysis

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## Scenario

## Description

### Adopted Policies

- 15% and 30% reduction in CO<sub>2</sub> of regulated HDVs
- Low level of ZE-HDV uptake until 2030
- Gradual acceleration thereafter

### Sustainable and Smart Mobility Strategy

- 80,000 zero emission trucks in 2030
- Nearly all zero emission buses in operation by 2050
- Nearly all new trucks sold in 2050 are zero emission

### Manufacturer-Aligned Zero Emission Targets

- Models the ambitions for ZE-HDV deployment laid out by major HDV manufacturers

# Manufacturer zero-emission vehicles pledges

	OEM	2025	2030	2039	2040	2020 Sales Share
Fleet Zero Emission Vehicle Targets	DAF	-	-	-	100%†	18%
	Iveco	-	-	-	100%†	6%
	MAN	-	50%	-	100%†	15%
	Daimler Trucks	-	60%*	100%	100%†	18%
	Renault Trucks	10%	35%	-	100%†	9%
	Scania	10%	50%	-	100%†	18%
	Volvo Trucks	7%	50%	-	100%†	16%

\*Daimler's target for 2030 is 'up to 60%'

†The target set for 2040 commits to 'fossil-free' vehicles, not zero-emission vehicles

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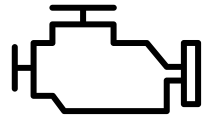
- Models the ambitions for ZE-HDV deployment laid out by major HDV manufacturers

### European Climate Law

- Increases ZE-HDV deployment in line with 98% reduction in emissions

# Compliance levers

## Efficiency Improvements



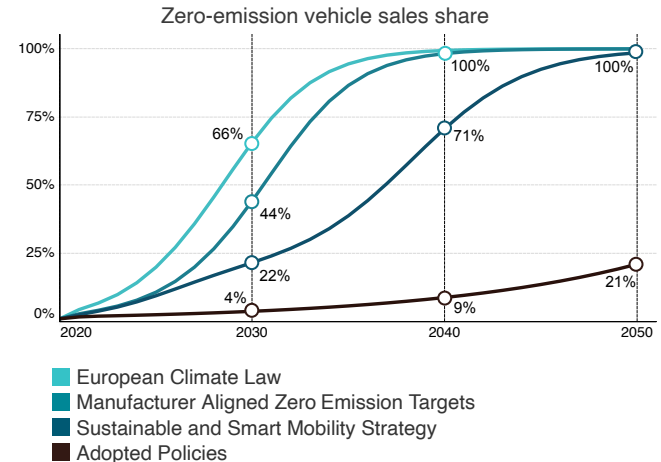
Adopted Policies

Efficiency improvement  
in line with the CO<sub>2</sub>  
standards

Sustainable and Smart Mobility Strategy  
Manufacturer-Aligned Zero Emission Targets  
European Climate Law

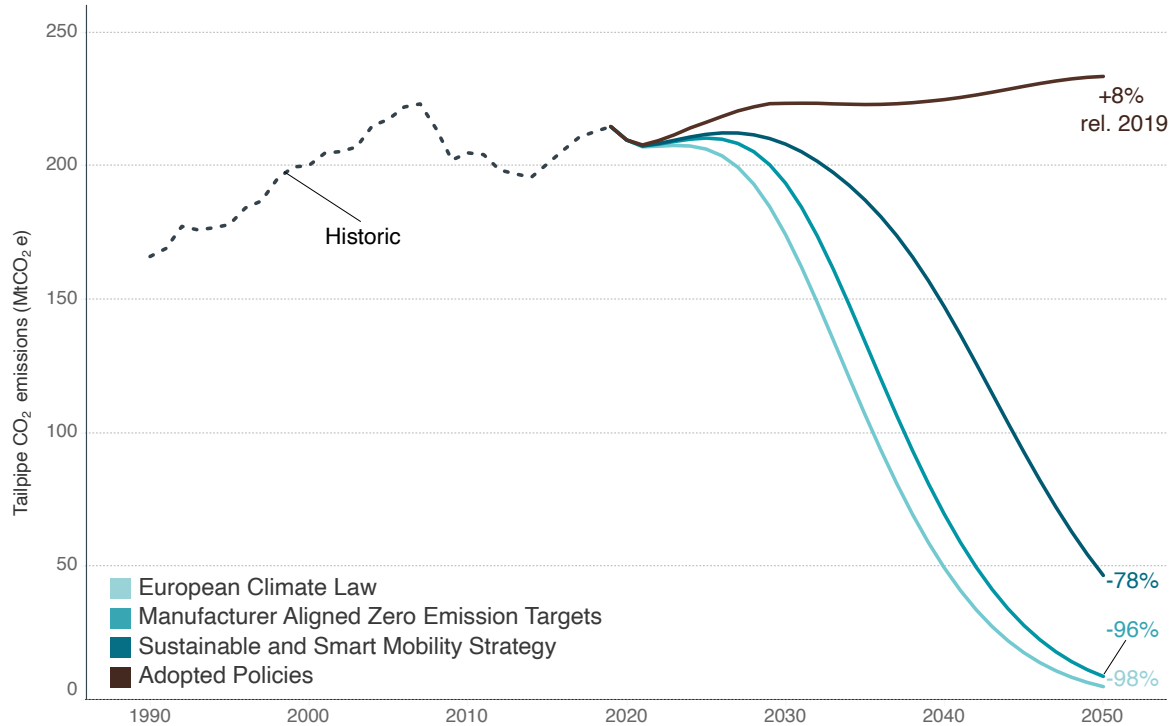
3% annual efficiency  
improvements

## ZEV adoption

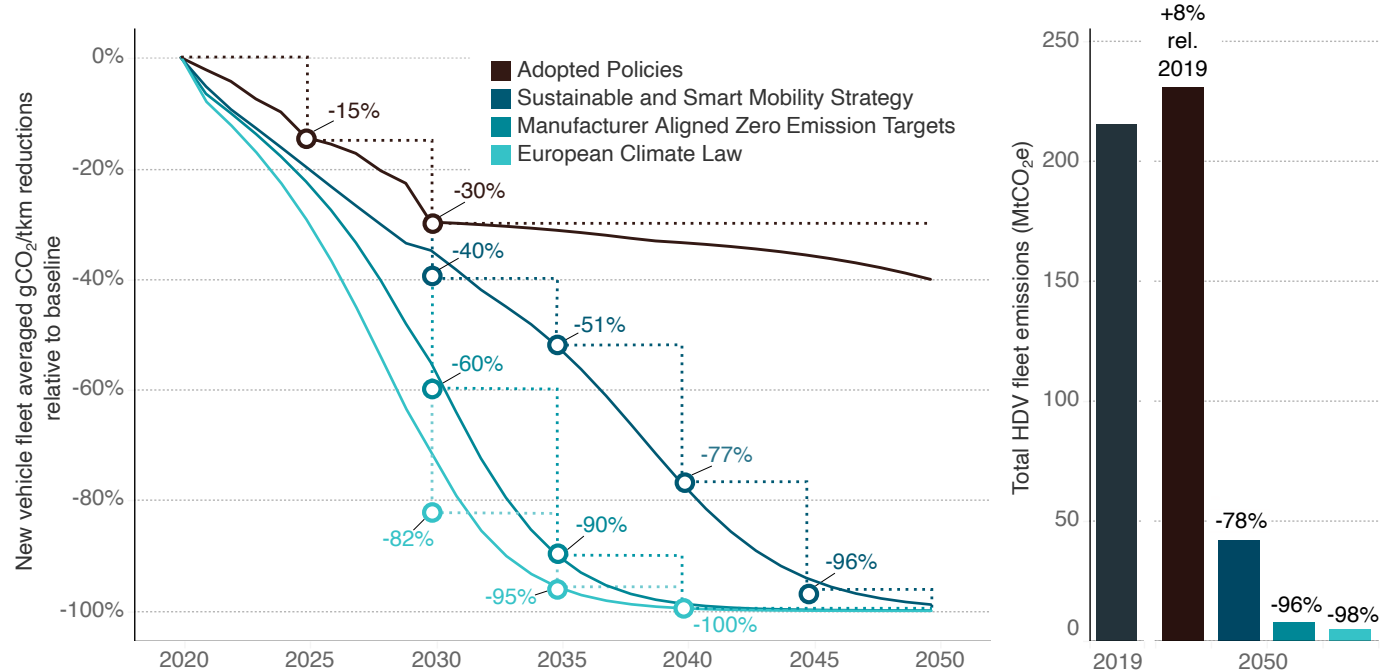




# Results – Emissions trajectory



# Corresponding 5-year targets



# Conclusions and policy recommendations

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- Truck and bus emissions are on track to **increase by 8% 2050**, despite the CO<sub>2</sub> standards
- Revise the CO<sub>2</sub> reduction target for 2030 from 30% **to at least 60%**
- Introduce CO<sub>2</sub> reduction targets of at least **90% for 2035 and 100% for 2040**
- Extend the scope of the regulation to include **all sales of HDVs**, to the extent feasible

Questions?  
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**icct**

THE INTERNATIONAL COUNCIL  
ON CLEAN TRANSPORTATION

San Francisco ●

Mexico City ○

Bogotá ○

● São Paulo

★ Washington, DC  
(headquarters)

● Berlin

● New Delhi

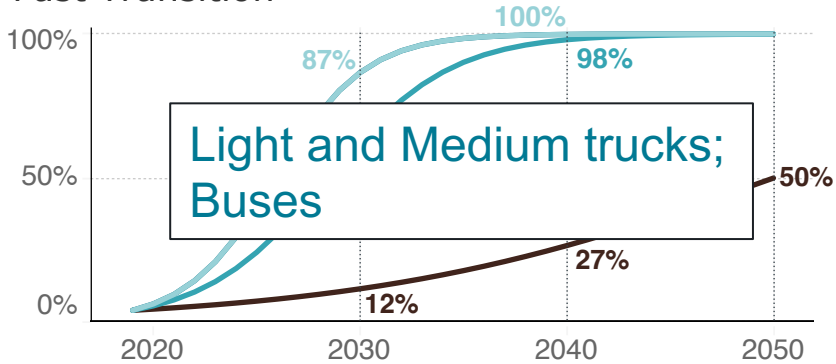
● Beijing

○ Jakarta

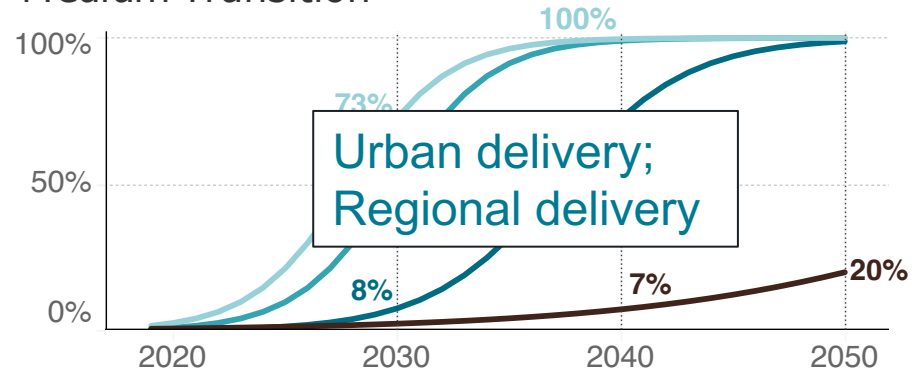


# ZEV Adoption

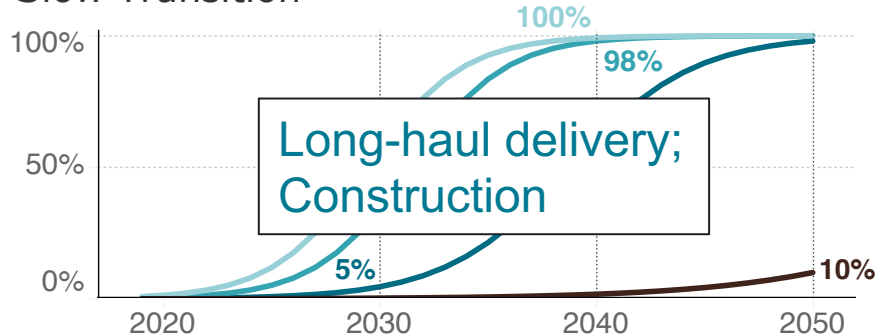
## Fast Transition



## Medium Transition



## Slow Transition



- European Climate Law
- Manufacturer Aligned Zero Emission Targets
- Sustainable and Smart Mobility Strategy
- Adopted Policies

# Stock Modelling

## Sales

- IHS Markit (2005 – 2020)
- IEA's MoMo (1980 – 2005)

## Stock

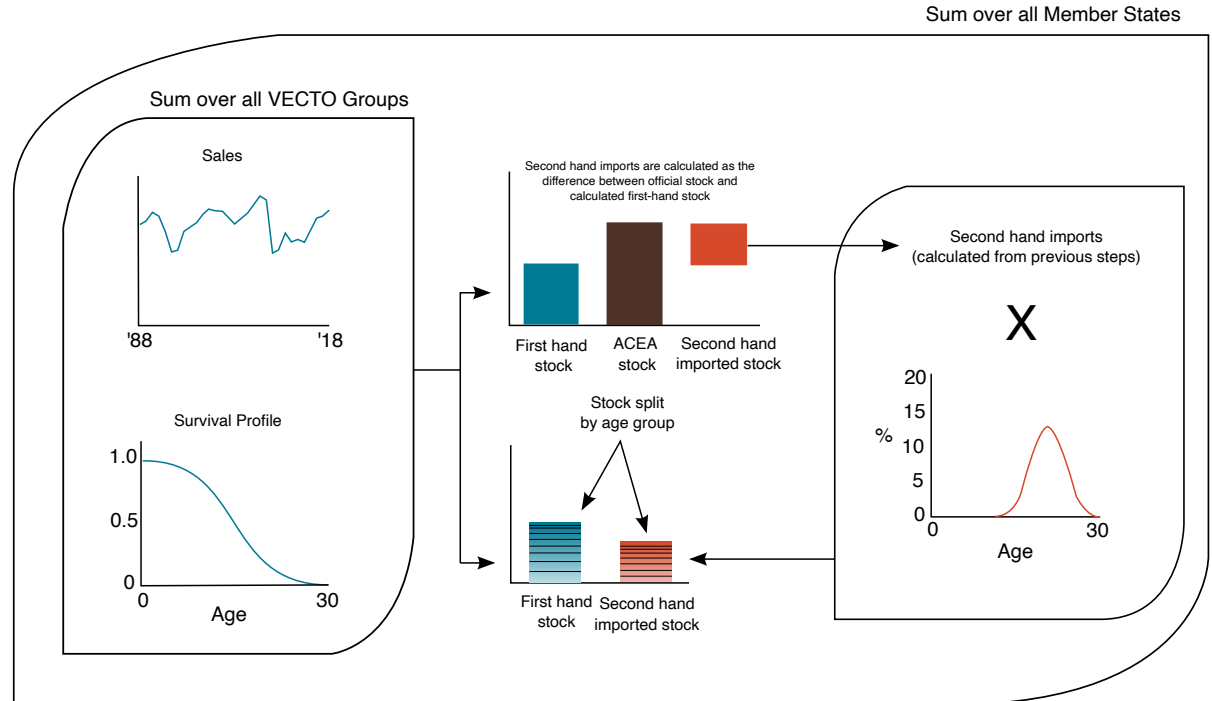
- ACEA Vehicles in Use
- Eurostat (by age profile)
- Comext (imports and exports)

## Mileage

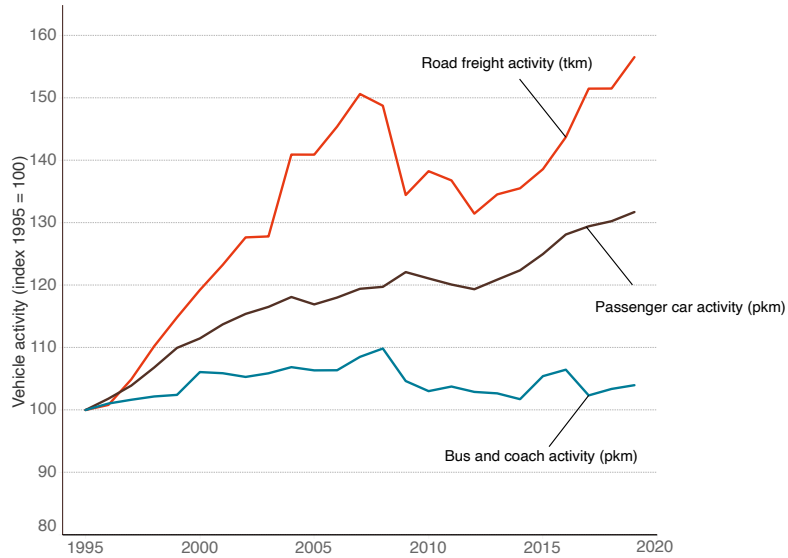
- TRACCS
- 2019/1242 reference values

## Energy Consumption

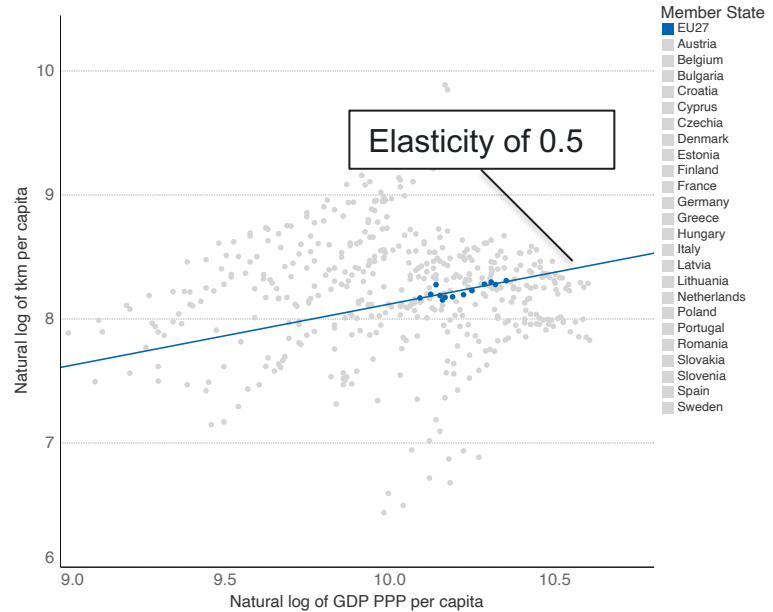
- EEA (Limited to vehicles covered by 2017/2400)
- Own Analysis



# Historic Freight Activity



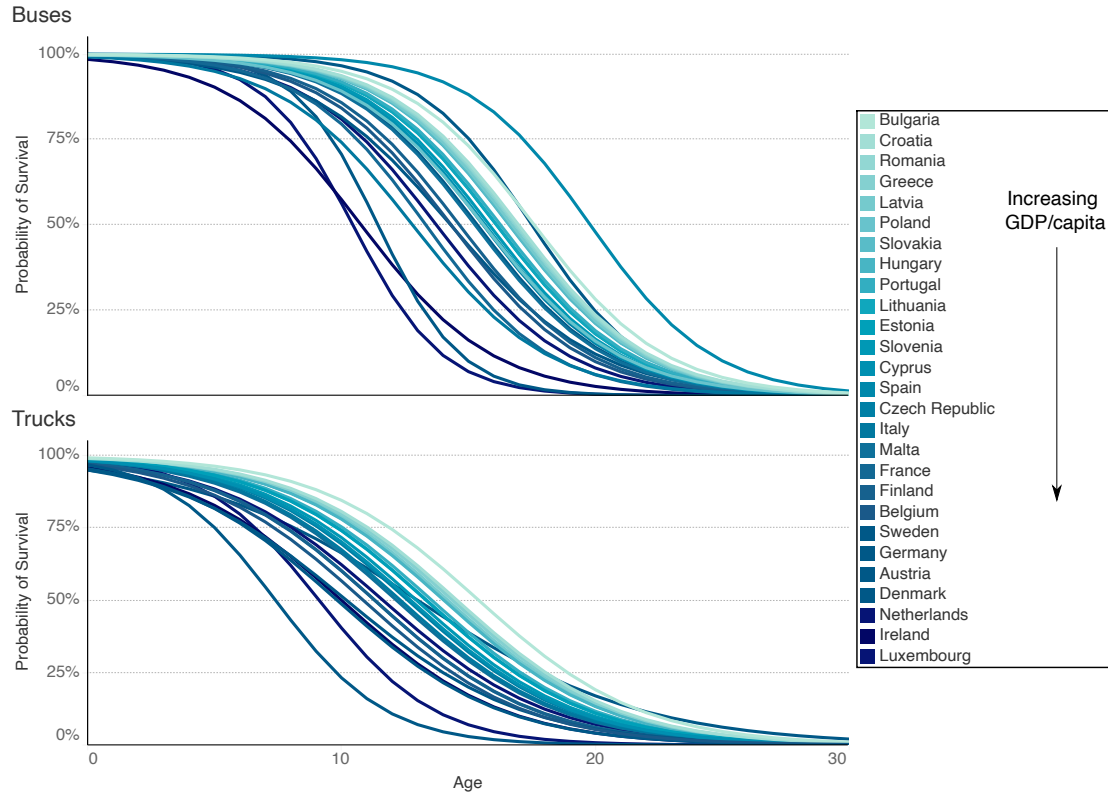
Source: EU Transport in Figure: Statistical Pocketbook (2021)



Source: Eurostat (2021): [demo\_pjan], [road\_go\_ta\_tott], [SDG\_10\_10]

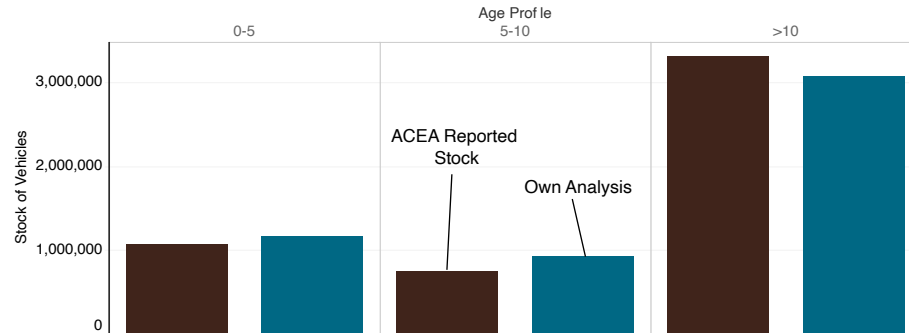


# Survival Profiles

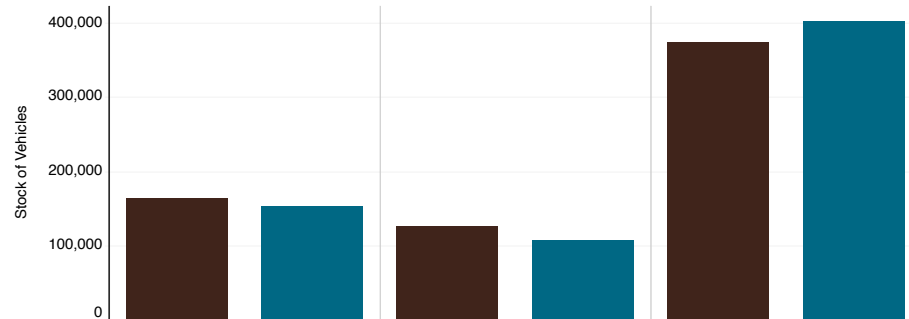


# Stock Modelling - Results

Trucks



Buses



# Cumulative Emissions

Scenario	New HDV CO <sub>2</sub> target (vs. 2019/2020)			HDV CO <sub>2</sub> e emissions savings (vs. 2019)*		Cumulative emission reduction by 2050 compared to Adopted Policies (MtCO <sub>2</sub> e)
	2030	2035	2040	2030	2050	
Adopted Policies	-30%	-30%	-30%	+4%	+8%	-
Sustainable and Smart Mobility Strategy	-38%	-52%	-77%	-3%	-78%	1,897
Manufacturer Aligned Zero Emission Targets	-57%	-92%	-100%	-10%	-96%	3,080
European Climate Law	-81%	-95%	-100%	-19%	-98%	3,498